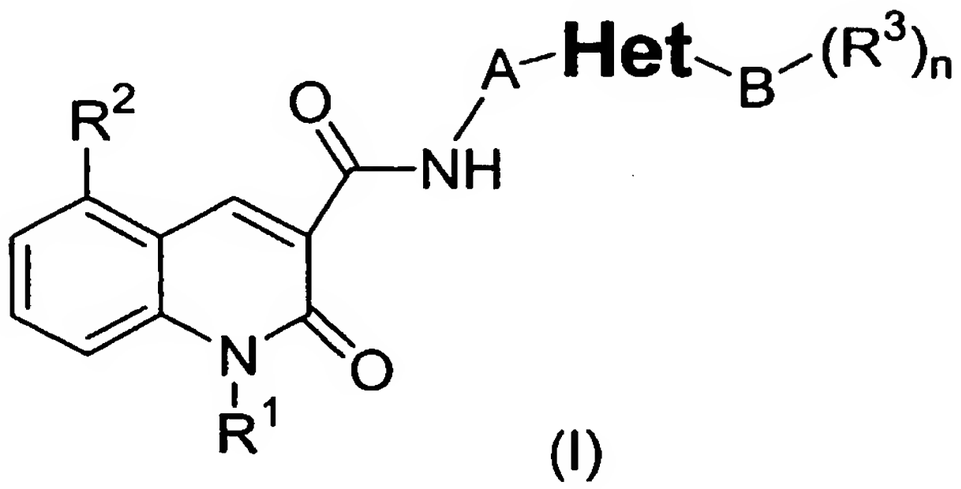
CLAIMS

1. A compound of the formula (I):



(I)

wherein

Het represents a heterocyclic group having one nitrogen atom, to which B binds directly, and from 4 to 7 carbon atoms, and said heterocyclic group being unsubstituted or substituted by 1 to 4 substituents independently selected from the group consisting of substituents α^1;

A represents an alkylene group having from 1 to 4 carbon atoms;

B represents a covalent bond or an alkylene group having from 1 to 5 carbon atoms;

$\mathbf{R^1}$ represents an isopropyl group, a n-propyl group or a cyclopentyl group;

$\mathbf{R^2}$ represents a methyl group, a fluorine atom or a chlorine atom;

$\mathbf{R^3}$ independently represents

(i) an oxo group, a hydroxy group, an amino group, an alkylamino group or a carboxyl group;

(ii) a cycloalkyl group having from 3 to 8 carbon atoms, and said cycloalkyl group being substituted by 1 to 5 substituents independently selected from the group consisting of substituents α^2, or

(iii) a heterocyclic group having from 3 to 8 atoms, and said heterocyclic group being unsubstituted or substituted by 1 to 5 substituents independently selected from the group consisting of substituents β,

said substituents α^1 are independently selected from a hydroxy group and an amino group;

said substituents α^2 are independently selected from a hydroxy group, an amino group, a hydroxy-substituted alkyl group having from 1 to 4 carbon atoms, a carboxyl group and an alkoxy group having from 1 to 4 carbon atoms; and

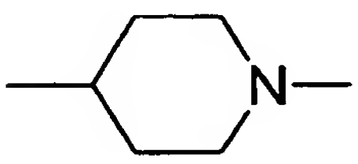
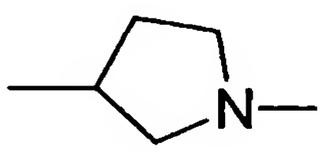
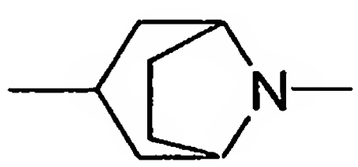
said substituents β are selected from a hydroxy group, a hydroxy-substituted alkyl

group having from 1 to 4 carbon atoms, a carboxyl group, an amino group, an alkyl group having from 1 to 4 carbon atoms, an amino-substituted alkyl group having from 1 to 4 carbon atoms and a carbamoyl group; and **n** is 1, 2 or 3,

or a pharmaceutically acceptable salts thereof.

2. The compound or its pharmaceutically acceptable salt of Claim 1, wherein

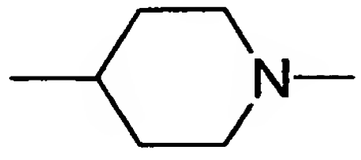
Het represents a heterocyclic group selected from

, and

said heterocyclic group being unsubstituted or substituted by 1 to 3 substituents independently selected from the group consisting of substituents α^1.

3. The compound or its pharmaceutically acceptable salt of Claim 1, wherein

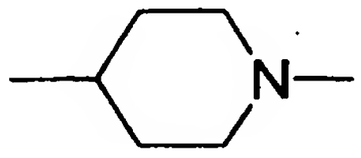
Het represents a group of formula  ,

and this group being unsubstituted or substituted by one substituent selected from the group consisting of substituents α^1;

A represents an alkylene group having from 1 to 3 carbon atoms; and

$\mathbf{R^1}$ represents an isopropyl group or a cyclopentyl group.

4. The compound or its pharmaceutically acceptable salt of Claim 1, wherein

Het represents a group of formula  ,

A represents an alkylene group having from 1 to 2 carbon atoms;

B represents an alkylene group having from 1 to 5 carbon atoms;

$\mathbf{R^3}$ independently represents

(i) an oxo group, a hydroxy group, an amino group, an alkylamino group or a carboxyl group;

(ii) a cycloalkyl group having from 5 to 7 carbon atoms, and said cycloalkyl group being substituted by 1 to 3 substituents independently selected from

the group consisting of substituents α^2, or

(iii) a heterocyclic group having from 5 to 7 atoms, and said heterocyclic group being unsubstituted or substituted by 1 to 3 substituents independently selected from the group consisting of substituents β,

said substituents α^2 are independently selected from a hydroxy group, an amino group, a hydroxy-substituted alkyl group having from 1 to 4 carbon atoms, a carboxyl group and an alkoxy group having from 1 to 4 carbon atoms; and

said substituents β are selected from a hydroxy group, a hydroxy-substituted alkyl group having from 1 to 4 carbon atoms, a carboxyl group, an amino group, an alkyl group having from 1 to 4 carbon atoms, an amino-substituted alkyl group having from 1 to 4 carbon atoms and a carbamoyl group; and **n** is 1, 2, or 3.

5. The compound or its pharmaceutically acceptable salt of Claim 1, wherein

A represents a methylene group;

B represents an alkylene group having from 1 to 5 carbon atoms;

R^1 represents an isopropyl group;

R^3 independently represents

(i) an oxo group or a hydroxy group;

(ii) a cycloalkyl group having from 5 to 6 carbon atoms, and said cycloalkyl group being substituted by 1 to 2 substituents independently selected from the group consisting of substituents α^2, or

(iii) a heterocyclic group having from 5 to 6 atoms, and said heterocyclic group being unsubstituted or substituted by 1 to 2 substituents independently selected from the group consisting of substituents β,

said substituents α^2 are independently selected from a hydroxy group or an amino group; and

said substituents β are selected from a hydroxy group, an amino group and an alkyl group having from 1 to 4 carbon atoms group; and **n** is 1 or 2.

6. The compound or its pharmaceutically acceptable salt of Claim 1, wherein

B represents an alkylene group having from 1 to 3 carbon atoms;

R^3 independently represents

(i) an oxo group or a hydroxy group;

(ii) a cyclohexyl group substituted by 1 to 2 hydroxy group, or

(iii) a heterocyclic group selected from a hydroxytetrahydropyranyl, piperidinyl and morpholinyl, and said heterocyclic group being unsubstituted or substituted by 1 to 2 substituents independently selected from a hydroxy group and a methyl group; and **n** is 1 or 2.

7. The compound or its pharmaceutically acceptable salt of Claim 6, wherein **B** represents a methylene group;

R^2 represents a methyl group;

R^3 independently represents a 1, 4 dihytdroxycyclohexyl group, a hydroxytetrahydropyranyl, piperidinyl and morpholinyl; and **n** is 1.

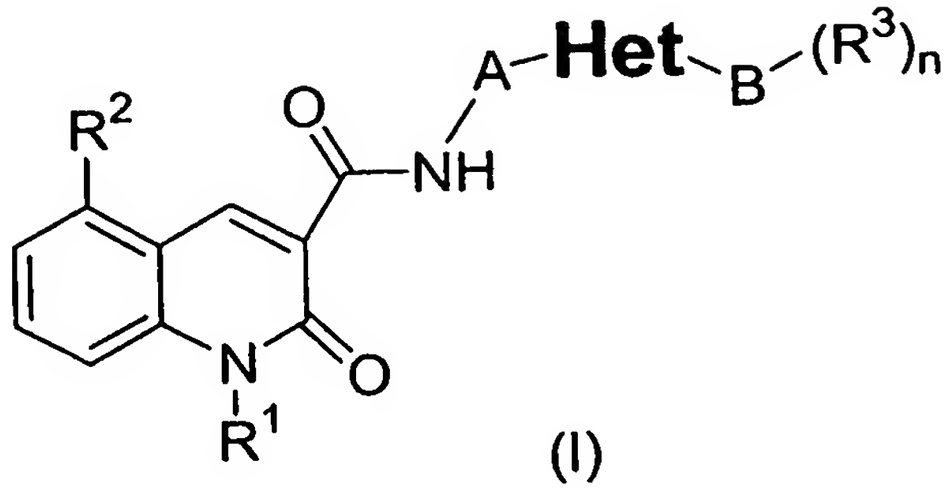
8. The compound or its pharmaceutically acceptable salt of Claim 7, wherein R^3 independently represents a 1, 4 dihytdroxycyclohexyl group or a hydroxytetrahydropyranyl.

9. The compound of Claim 1 which is

N-({1-[(*cis*-1,4-dihhydroxycyclohexyl)methyl]piperidin-4-yl}methyl)-1-isoprppyl-5-methyl-2-oxo--1,2- dihydroquinoline-3-carboxamide ethanedioate;

N-({1-[(*trans*-1,4-dihhydroxycyclohexyl)methyl]piperidin-4-yl}methyl)-1-isoprppyl-5-methyl-2-oxo-1,2-dihydroquinoline-3-carboxamide ethanedioate, or a pharmaceutically acceptable salt thereof.

10. A pharmaceutical composition for the treatment of diseases selected from gastroesophageal reflux disease, gastrointestinal disease, gastric motility disorder, non-ulcer dyspepsia, functional dyspepsia, irritable bowel syndrome (IBS), constipation, dyspepsia, esophagitis, gastroesophageral disease, nausea, central nervous system disease, Alzheimer's disease, cognitive disorder, emesis, migraine, neurological disease, pain, and cardiovascular disorders such as cardiac failure and heart arrhythmia, diabetes, apnea syndrome, postoperative bowel motility, which comprises a therapeutically effective amount of a compound of the formula (I):



(I)

wherein

Het represents a heterocyclic group having one nitrogen atom, to which B binds directly, and from 4 to 7 carbon atoms, and said heterocyclic group being unsubstituted or substituted by 1 to 4 substituents independently selected from the group consisting of substituents α^1;

A represents an alkylene group having from 1 to 4 carbon atoms;

B represents a covalent bond or an alkylene group having from 1 to 5 carbon atoms;

$\mathbf{R^1}$ represents an isopropyl group, a n-propyl group or a cyclopentyl group;

$\mathbf{R^2}$ represents a methyl group, a fluorine atom or a chlorine atom;

$\mathbf{R^3}$ independently represents

(i) an oxo group, a hydroxy group, an amino group, an alkylamino group or a carboxyl group;

(ii) a cycloalkyl group having from 3 to 8 carbon atoms, and said cycloalkyl group being substituted by 1 to 5 substituents independently selected from the group consisting of substituents α^2, or

(iii) a heterocyclic group having from 3 to 8 atoms, and said heterocyclic group being unsubstituted or substituted by 1 to 5 substituents independently selected from the group consisting of substituents β,

said substituents α^1 are independently selected from a hydroxy group and an amino group;

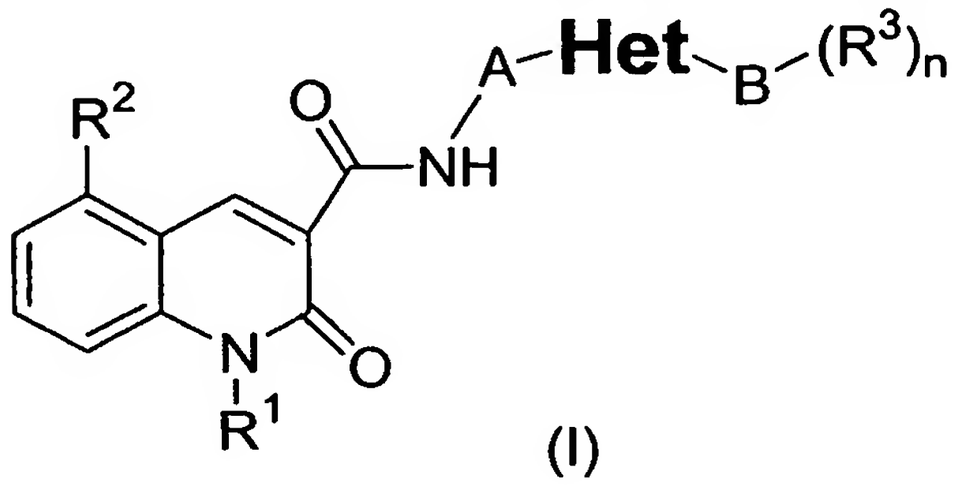
said substituents α^2 are independently selected from a hydroxy group, an amino group, a hydroxy-substituted alkyl group having from 1 to 4 carbon atoms, a carboxyl group and an alkoxy group having from 1 to 4 carbon atoms; and

said substituents β are selected from a hydroxy group, a hydroxy-substituted alkyl group having from 1 to 4 carbon atoms, a carboxyl group, an amino group, an alkyl group having from 1 to 4 carbon atoms, an amino-substituted alkyl group having from

1 to 4 carbon atoms and a carbamoyl group; and **n** is 1, 2 or 3,

or a pharmaceutically acceptable salts thereof..

11. A method for the treatment of disease conditions mediated by 5-HT_4 receptor activity, in a mammalian subject, which comprises administering to said subject a



(I)

wherein

Het represents a heterocyclic group having one nitrogen atom, to which B binds directly, and from 4 to 7 carbon atoms, and said heterocyclic group being unsubstituted or substituted by 1 to 4 substituents independently selected from the group consisting of substituents α^1;

A represents an alkylene group having from 1 to 4 carbon atoms;

B represents a covalent bond or an alkylene group having from 1 to 5 carbon atoms;

$\mathbf{R^1}$ represents an isopropyl group, a n-propyl group or a cyclopentyl group;

$\mathbf{R^2}$ represents a methyl group, a fluorine atom or a chlorine atom;

$\mathbf{R^3}$ independently represents

(i) an oxo group, a hydroxy group, an amino group, an alkylamino group or a carboxyl group;

(ii) a cycloalkyl group having from 3 to 8 carbon atoms, and said cycloalkyl group being substituted by 1 to 5 substituents independently selected from the group consisting of substituents α^2, or

(iii) a heterocyclic group having from 3 to 8 atoms, and said heterocyclic group being unsubstituted or substituted by 1 to 5 substituents independently selected from the group consisting of substituents β,

said substituents α^1 are independently selected from a hydroxy group and an amino group;

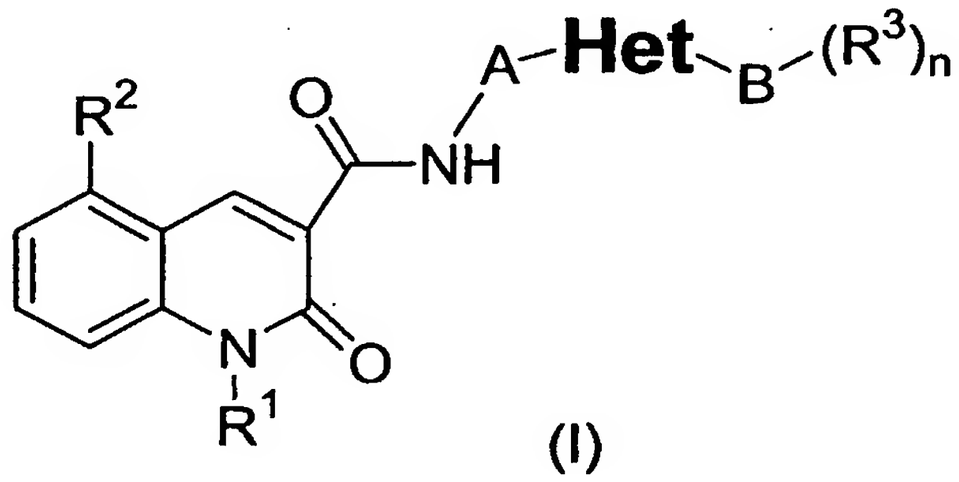
said substituents α^2 are independently selected from a hydroxy group, an amino

group, a hydroxy-substituted alkyl group having from 1 to 4 carbon atoms, a carboxyl group and an alkoxy group having from 1 to 4 carbon atoms; and

said substituents β are selected from a hydroxy group, a hydroxy-substituted alkyl group having from 1 to 4 carbon atoms, a carboxyl group, an amino group, an alkyl group having from 1 to 4 carbon atoms, an amino-substituted alkyl group having from 1 to 4 carbon atoms and a carbamoyl group; and **n** is 1, 2 or 3,

or a pharmaceutically acceptable salts thereof.

12. A method for the treatment of diseases selected from gastroesophageal reflux disease, gastrointestinal disease, gastric motility disorder, non-ulcer dyspepsia, functional dyspepsia, irritable bowel syndrome (IBS), constipation, dyspepsia, esophagitis, gastroesophageral disease, nausea, central nervous system disease, Alzheimer's disease, cognitive disorder, emesis, migraine, neurological disease, pain, and cardiovascular disorders such as cardiac failure and heart arrhythmia, diabetes, apnea syndrome, and postoperative bowel motility, which comprises administering to said subject a therapeutically effective amount of a compound of the formula (I):



(I)

wherein

Het represents a heterocyclic group having one nitrogen atom, to which B binds directly, and from 4 to 7 carbon atoms, and said heterocyclic group being unsubstituted or substituted by 1 to 4 substituents independently selected from the group consisting of substituents α^1;

A represents an alkylene group having from 1 to 4 carbon atoms;

B represents a covalent bond or an alkylene group having from 1 to 5 carbon atoms;

$\mathbf{R^1}$ represents an isopropyl group, a n-propyl group or a cyclopentyl group;

$\mathbf{R^2}$ represents a methyl group, a fluorine atom or a chlorine atom;

$\mathbf{R^3}$ independently represents

(i) an oxo group, a hydroxy group, an amino group, an alkylamino group or a carboxyl group;

(ii) a cycloalkyl group having from 3 to 8 carbon atoms, and said cycloalkyl group being substituted by 1 to 5 substituents independently selected from the group consisting of substituents α^2, or

(iii) a heterocyclic group having from 3 to 8 atoms, and said heterocyclic group being unsubstituted or substituted by 1 to 5 substituents independently selected from the group consisting of substituents β,

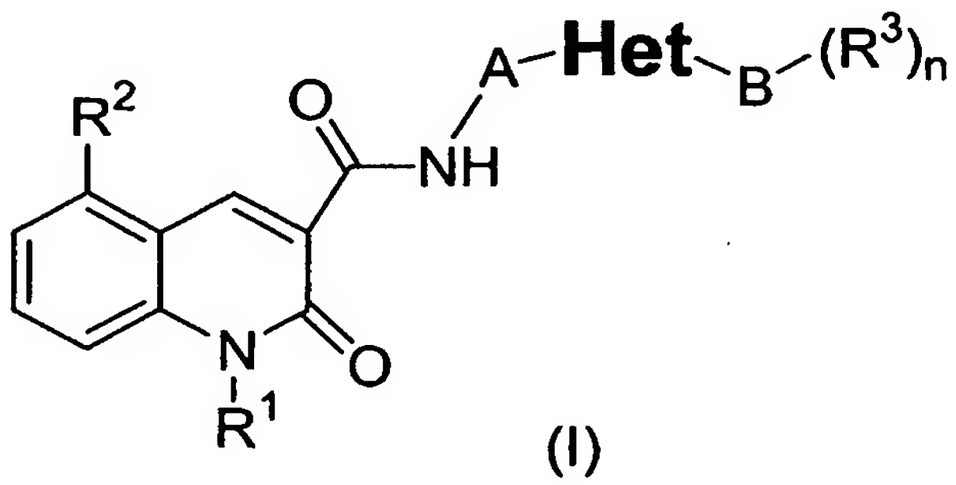
said substituents α^1 are independently selected from a hydroxy group and an amino group;

said substituents α^2 are independently selected from a hydroxy group, an amino group, a hydroxy-substituted alkyl group having from 1 to 4 carbon atoms, a carboxyl group and an alkoxy group having from 1 to 4 carbon atoms; and

said substituents β are selected from a hydroxy group, a hydroxy-substituted alkyl group having from 1 to 4 carbon atoms, a carboxyl group, an amino group, an alkyl group having from 1 to 4 carbon atoms, an amino-substituted alkyl group having from 1 to 4 carbon atoms and a carbamoyl group; and **n** is 1, 2 or 3,

or a pharmaceutically acceptable salts thereof.

13. Use of a compound of the formula (I):



(I)

wherein

Het represents a heterocyclic group having one nitrogen atom, to which B binds directly, and from 4 to 7 carbon atoms, and said heterocyclic group being unsubstituted or substituted by 1 to 4 substituents independently selected from the group consisting of substituents α^1;

A represents an alkylene group having from 1 to 4 carbon atoms;

B represents a covalent bond or an alkylene group having from 1 to 5 carbon atoms;

$\mathbf{R^1}$ represents an isopropyl group, a n-propyl group or a cyclopentyl group;

$\mathbf{R^2}$ represents a methyl group, a fluorine atom or a chlorine atom;

$\mathbf{R^3}$ independently represents

(i) an oxo group, a hydroxy group, an amino group, an alkylamino group or a carboxyl group;

(ii) a cycloalkyl group having from 3 to 8 carbon atoms, and said cycloalkyl group being substituted by 1 to 5 substituents independently selected from the group consisting of substituents α^2, or

(iii) a heterocyclic group having from 3 to 8 atoms, and said heterocyclic group being unsubstituted or substituted by 1 to 5 substituents independently selected from the group consisting of substituents β,

said substituents α^1 are independently selected from a hydroxy group and an amino group;

said substituents α^2 are independently selected from a hydroxy group, an amino group, a hydroxy-substituted alkyl group having from 1 to 4 carbon atoms, a carboxyl group and an alkoxy group having from 1 to 4 carbon atoms; and

said substituents β are selected from a hydroxy group, a hydroxy-substituted alkyl group having from 1 to 4 carbon atoms, a carboxyl group, an amino group, an alkyl group having from 1 to 4 carbon atoms, an amino-substituted alkyl group having from 1 to 4 carbon atoms and a carbamoyl group; and **n** is 1, 2 or 3,

or a pharmaceutically acceptable salts thereof,

in the manufacture of a medicament for the treatment of disease conditions mediated by 5-HT_4 receptor activity and/or 5-HT_3 activity, in a mammalian subject.

14. Use of a compound according to Claim 13, wherein said condition is selected from gastroesophageal reflux disease, gastrointestinal disease, gastric motility disorder, non-ulcer dyspepsia, functional dyspepsia, irritable bowel syndrome (IBS), constipation, dyspepsia, esophagitis, gastroesophageral disease, nausea, central nervous system disease, Alzheimer's disease, cognitive disorder, emesis, migraine, neurological disease, pain, and cardiovascular disorders such as cardiac failure and heart arrhythmia, diabetes and apnea syndrome, and postoperative bowel motility.